Boat Ramp Monitoring Program

Department of Recreation and Conservation
Lakes and Ponds Program
November 2004

Table of Contents

Massachusetts
Department of Conservation & Recreation
Lakes and Ponds Program

2004 Boat Ramp Monitoring Program

In response to the increasing spread of invasive non-native aquatic species throughout our water bodies, the Department of Conservation and Recreation (DCR) Lakes and Ponds Program has developed the Boat Ramp Monitor Program.

Non-native or exotic species are plants or animals that are indigenous to other parts of the country or world, and when they are introduced to a new area often disrupt the balance of the new ecosystem. Many non-native plants reproduce very rapidly, displacing native species and developing mats at the water's surface that render boating, fishing, swimming and other recreational activities impossible or dangerous.

Non-native plants are introduced to new areas in a variety of ways including accidental escape from the aqua-gardening/aquarium trade, intentional release or by hitching rides from foreign countries in ship ballast water. Once introduced to a new area, they are further spread around to additional water bodies on boat motors, trailers, fishing gear and in bait buckets. Many non-native plants reproduce vegetatively. This means, that when just one small plant fragment enters a new water body it is able to grow into a mature plant and potentially infest the entire lake or pond. When a non-native species is established it is very expensive to control and nearly impossible to eradicate. **Prevention is the key!**

The Boat Ramp Monitor Program is a three-pronged approach to this problem. Boat ramp monitors have been placed at both infested and un-infested lakes and ponds statewide. For the summer of 2004, five ramp monitors hired and they were placed at Big Pond, Lake Cochituate, Lake Wyola, Laurel Lake, Pontoosuc Reservoir, Wallum Lake, Whitehall Reservoir and Ashland Reservoir (some monitors covered multiple ramps). Their goal was to inspect every boat entering or leaving to make sure that no plant fragments are attached the boat, trailer or gear. Boaters were given an informational brochure, asked to participate in a voluntary boat inspection and complete a brief survey.

First, this project helps prevent pristine water bodies from becoming infested; it reduces further spread of the exotic plants from infested areas, and finally, educates boaters about non-native species and the steps they can take to protect our lakes and ponds.

2004 Boat Ramp Monitor Locations

Protection

Wallum Lake
Located in Douglas, MA in the heart of Douglas State Forest, this 322-acre water body has deep clarity and a maximum depth of 78 feet. A 2002 plant survey showed that there were no non-native aquatic species present, and plant growth in general was limited. This boat ramp is highly used, and due to its proximity to Rhode Island and Connecticut, draws numerous out of state boaters. A second ramp is located in Burrowville, RI.

Big Pond
Big Pond in Otis MA is fortunate not to have any infestations of non-native aquatic species, despite it's high boater use. There are two ramps that provide access to the water body, the Big Pond Boat ramp and J & D Marina.

Otis Reservoir
This large 1200-acre water body is located in Tolland State Forest, and since the water body is free of non-native aquatic species, it is considered a priority protection location for the Lakes and Ponds Program. Although the water body is relatively shallow, plant growth is somewhat scarce.

Laurel Lake
Laurel Lake is a 51-acre lake located in Erving State Forest. Currently there are no documented infestations of non-native aquatic plants in this water body. The water quality is clear and there is limited plant growth.

Lake Wyola
This 129-acre lake, located in Carroll Holmes Recreational area in Shutesbury, MA has high recreational use, including fishing, boating and swimming. Although the plant growth is dense in several areas, the plant community consists of native species.

Preventing Further Spread

Lake Cochituate
Sprawled across three towns (Natick, Wayland and Framingham), this 650-acre lake draws over 200,000 visitors annually to Cochituate State Park, many of which are boaters. Additionally, it is a favorite location for bass tournaments, water skiing competitions and other public events. As of 2002, this water body has had a large infestation of three non-native species; Eurasian Milfoil (*Myriophyllum spicatum*), Variable Milfoil (*Myriophyllum heterophyllum*), and Curly-leaved Pondweed (*Potamogeton crispus*). DCR's main concern is to prevent the spread of these species to other water bodies in the area, and to educate the large number of boaters who frequent the lake.

Whitehall Reservoir
Located in Whitehall State Park in Hopkinton, MA, this vast 573-acre water body is a favorite spot for location for fishermen. It is relatively shallow (average depth is 6ft) and the speed limit on the water body prevents waterskiing and other water sports. Unfortunately, a large infestation of Variable Milfoil (*M. heterophyllum*) threatens the health of the reservoir. The goal of the ramp monitor here was to stop this species from spreading to other water bodies in the area, and to prevent the introduction of any additional non-native species.

Ashland Reservoir
Located in Ashland State Park, this water body is popular with canoers, kayakers and local fisherman. The water body has an average depth of 23 feet and has an infestation of Variable Milfoil *(M. heterophyllum*).

Pontoosuc Reservoir
Each summer a harvester sweeps back and forth across the lake, mowing the dense mats of Eurasian Milfoil (*M. spicatum*), Curly-leaved Pondweed (*P. crispus*), European Naiad (*Najas minor*) and Water Chestnut (*Trapa natans*) that plague this 480-acre lake. Pontoosuc Reservoir is located in Pittsfield State Forest and spans the towns of Lanesboro and Pittsfield.

Department of Conservation and Recreation
Lakes and Ponds Program
Boat Ramp Monitoring Program 2004

Welcome to_____. My name is_____, and I work for the Department of Conservation and Recreation. We are working to protect our public lakes and ponds from infestations of invasive exotic plants. Do you mind if I take a couple of minutes to check your boat for the presence aquatic plants and to ask you a few brief questions about aquatic invasive species? Invasive plants and animals are species that are not native to this area and have been introduced here from other parts of the country or world. Once they enter a waterbody they can disrupt the ecosystem, drive out native species, impair recreational activities including boating, fishing and swimming, and decrease property values. By increasing public awareness we hope to slow the spread of these invasive species.

Boater Survey

1) What town and state do you currently live in? _____

2) What are the last two lakes or ponds that your boat has been in?

3) Prior to today, had you heard of invasive exotic species? YES NO

If so, which species have you heard about? _____

5) Do you know if your boat has been in any lakes or ponds with invasive species? YES NO

6) Are you aware that one of the main ways that invasive plants enter a lake or pond is by hitching rides on boat trailers, motors and other gear? YES NO

7) Are you willing to take the time to inspect and wash your boat after visiting a lake or pond? YES NO

8) Has this conversation increased your awareness and concern of invasive species? YES NO

Thank you for taking the time to participate in our survey. Here are a few brochures containing additional information on aquatic invasive species and a complimentary boat key ring. Enjoy your visit!

- Did you obtain permission to inspect the boat and trailer? YES NO
- Were any plant fragments or aquatic animals present on the boat? YES NO
- If so, were they non-native? Which plants did you find? YES NO
- Were the plant fragments removed? YES NO
- Was the boat owner aware of their presence? YES NO

Results

Total Number of Surveys collected

During the first season of the DCR Lakes and Ponds Boat Ramp Monitoring program, 1319 surveys were collected from boaters statewide. Overall, the busiest boat ramp was Cochituate State Park in Natick, with 365 surveys collected, followed by Wallum Lake in Douglas State Forest (281 surveys); Otis Reservoir (232 surveys); Whitehall Reservoir (139 surveys); Big Pond (109 surveys); Laurel Lake (98 surveys); Pontoosuc Reservoir (87 surveys), Lake Wyola and Ashland Reservoir with 4 surveys each.

Overall

(The combined responses from all the ramps to each question is listed in Table A.)
(Responses for individual ramps are listed in Table B)
The survey results show that of the 1319 surveys collected:

- 14% of our boaters are from out of state (see Graph 1)
- 80.4% of boaters are aware of invasive species (see Graph 2)
- The non-native species that people were most familiar with was Milfoil (410), followed by Zebra Mussels (168). (see Graph 3 for a complete list)
- 78% of the boaters understand that plants can be spread by boats, trailers and gear (see Graph 4)
- 99% of all boaters surveyed were willing to wash their boats. (see Graph 5)
- 76% of the boaters felt the conversation increased their awareness (Graph 6)
- 95% of the boaters were willing to participate in the voluntary inspection (5.2 % refused, and the remaining 70 boats (5.3%) had already been launched, so an inspection was not possible). (see Graph 7)
- 11.3% of the 1180 inspected boats had plant fragments (see Graph 8)
- 57.4% (73 boats) of these boats were carrying non-native plant fragments. (see Graph 9)

Differences between the boat ramps

(The breakdown of responses by each water body is listed in Table B)

- The survey results show that boaters had the greatest awareness of exotic invasive species at Otis Reservoir and Big Pond, where 98.8 % of the boaters were very familiar with invasive plants, and the least awareness at Wallum/Whitehall with only 67.9% of the boaters having prior knowledge of AIS. Pontoosuc Reservoir was also on the low end, where only 71.3% of the survey participants were aware of invasive species.
- At Big Pond/Otis Reservoir, 94.4% of the visitors were aware that boats are one of the main pathways that non-native plants enter a new water body; however, only 53.57% of the boaters at Pontoosuc Reservoir and 70.9% at Wallum/Whitehall were aware of this.
- 83.3 % of the visitors to Laurel Lake and Lake Wyola felt that their conversation with the ramp monitor increased their knowledge of exotic species, while only 71.4 % at Pontoosuc Reservoir felt enlightened.
- At every water body, over 99% of the boaters were willing to wash and inspect their boats, with the exception of Laurel Lake/Lake Wyola where only 91.2% were willing.
- Boaters at Cochituate, Otis, Big Pond, Laurel Lake and Lake Wyola were 100% willing to participate in the voluntary boat inspection, however, 66 boaters at Wallum/Whitehall and 3 boaters at Pontoosuc Reservoir declined a voluntary inspection. This is not surprising, as visitors to these two water bodies had the least awareness of invasive species.
- The greatest numbers of boats carrying plant fragments were launched at Cochituate Reservoir (15.9%) followed by Pontoosuc Reservoir (13.8%). Conversely, at the Big Pond and Otis Reservoir ramps, where the AIS awareness was the greatest, only 6.5% of the boats inspected contained plant fragments.

2004 Survey Totals

Overall results (Table A)

Question	yes	no	blank	total
Was the boat from out of state?	189	1130	0	1319
Prior to today, have you heard of AIS?	1061	258	0	1319
Are you aware boats spread AIS?	1026	289	4	1319
Are you willing to wash your boat?	1298	13	8	1319
Has this conversation increased awareness?	988	311	20	1319
Permission given to inspect boat and trailer?	1180	69	70	1319
Were any plant fragments present?	131	1028	21	1180
Were the fragments found were non-native?	73	45	4	131

Results by ramp (Table B)

	Total surveys for ramp	# From out of state	%	# Aware of AIS	%
Lake Cochituate	365	5	1.36	293	80.27
Otis & Big Pond	341	85	24.92	337	98.82
Wallum, Whitehall, Ashland	424	70	16.5	288	67.9
Laurel Lake & Lake Wyola	102	4	3.92	81	79.41
Pontoosuc Reservoir	87	22	25.28	62	71.26
	1319	186	14.1	1061	80.4

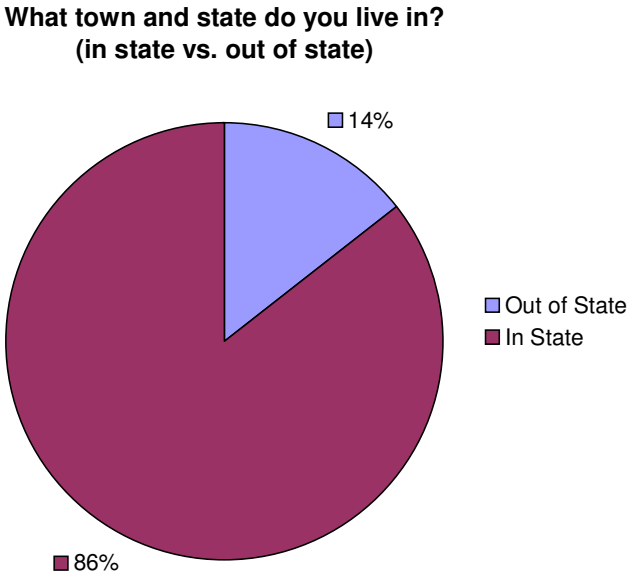
	Total surveys for ramp	# Aware boats transport AIS?	%	# Willing to inspect?	%
Lake Cochituate	365	273	74.79	364	99.72
Otis & Big Pond	341	322	94.42	*337*	99.41
Wallum, Whitehall, Ashland	424	*300*	70.9	*421*	99.5
Laurel Lake & Lake Wyola	102	86	84.31	93	91.17
Pontoosuc Reservoir	87	*45*	53.57	*84*	100
	1319	1026	77.8	1299	98.5

	Total for ramp	# Increased awareness	%	# Boats inspected?	%
Lake Cochituate	365	282	77.26	314	100
Otis & Big Pond	341	260	76.24	341	100
Wallum, Whitehall, Ashland	424	*301*	73.95	*352*	84.21
Laurel Lake & Lake Wyola	102	85	83.33	102	100
Pontoosuc Reservoir	87	*60*	71.42	*71*	97.26
	1319	988	75	1180	89.5

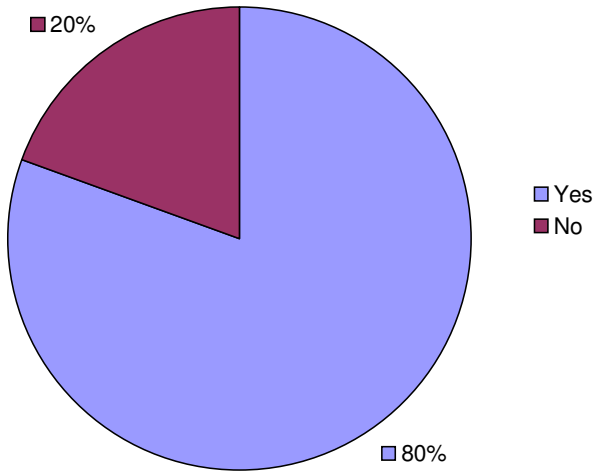
	Total for ramp	# Of boats w/ plant fragments	%	# of fragments were AIS?	%
Lake Cochituate	365	50	15.92	27	54
Otis & Big Pond	341	22	6.45	5	22.72
Wallum, Whitehall, Ashland	424	38	10.79	26	68.42
Laurel Lake & Lake Wyola	102	9	8.82	3	33.33
Pontoosuc Reservoir	87	12	13.79	12	100
	1319	131	11.1	73	55.7

Graphs Boater Survey Results

Graph 1

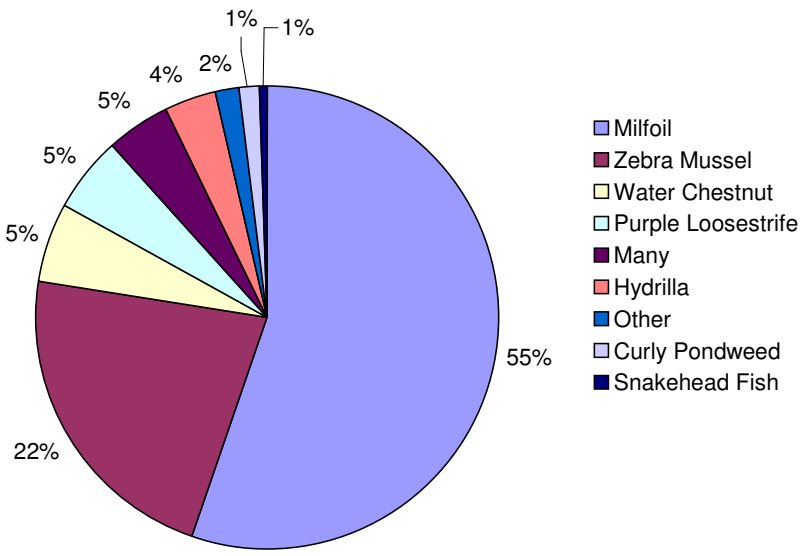


Graph 2



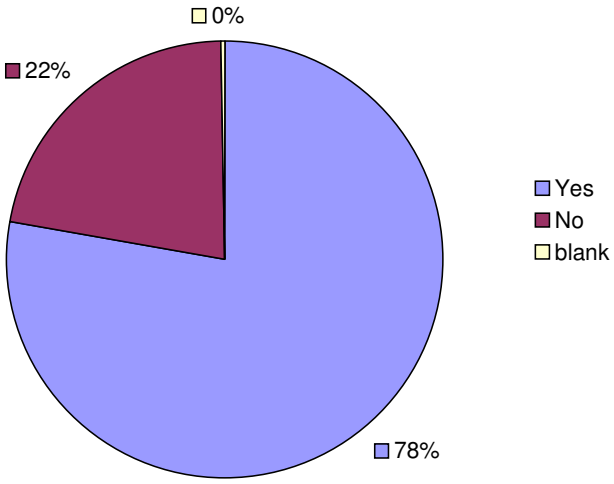
Graph 3

If so, what species have you heard of?



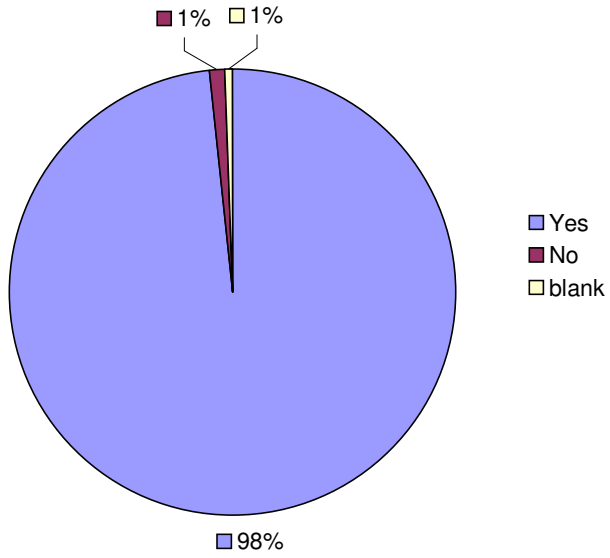
Graph 4

Are you aware that one of the main ways that invasive plants enter a lake or pond in by hitching rides on boat trailers, motors and gear?



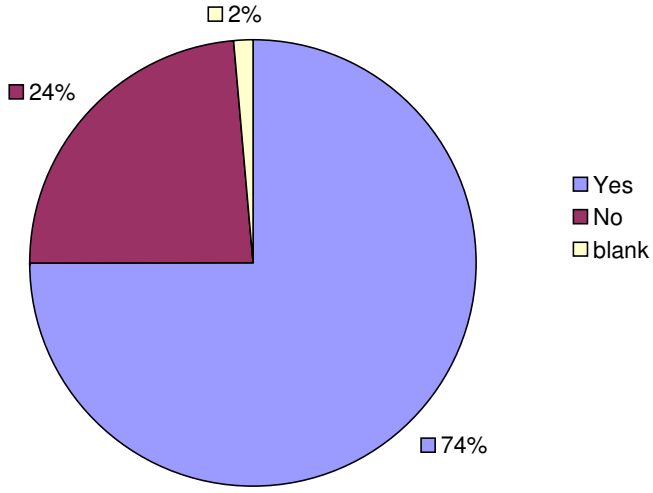
Graph 5

Are you willing to take the time to inspect and wash your boat after visiting a lake or pond?

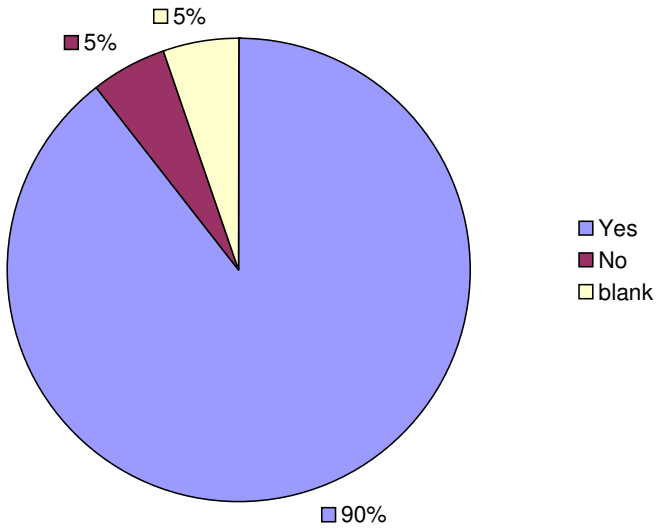


Graph 6

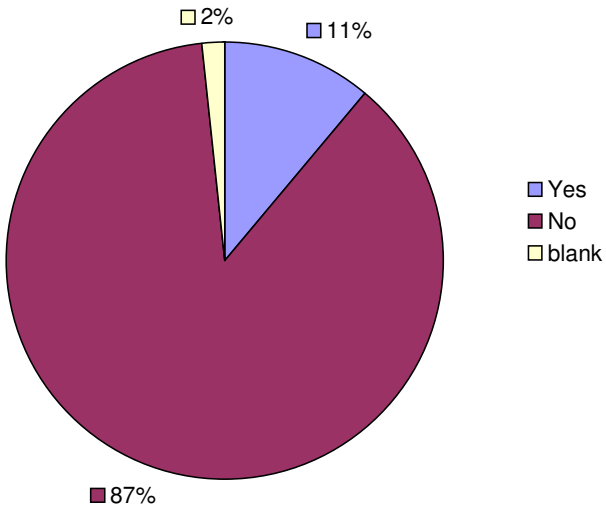
Has this conversation increased your awareness of non-native species?



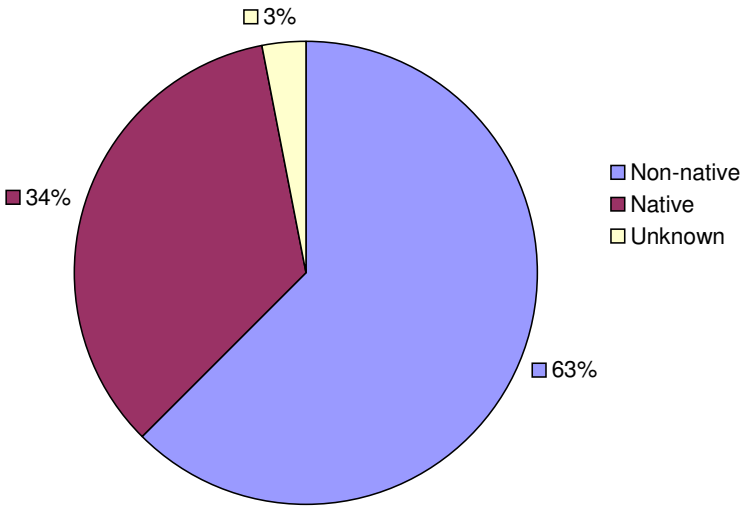
Graph 7 **Did you obtain permission to inspect the boat and trailer?**



Graph 8 **Were plant fragments or aquatic animals present on the boat or trailer?**



Graph 9 **Of the plant fragments found, were any non-native?**



Discussion

Based on this survey, it appears that boaters have an awareness of non-native issues, are generally willing to both wash and inspect their boat, and willing to participate in volunteer inspections. The majority of the boaters felt that their discussion with the ramp monitor increased their awareness and 73 saves resulted from the cooperation of the boaters. A save occurs when fragments of non-native plants are removed from a boat prior to entering or leaving a water body.

However, when analyzing the results from the surveys, there are some unclear trends. 285 people circled NO when asked if they had any prior knowledge of AIS, yet 1026 circled YES on the following question when asked if they knew that boats are a main pathway for the spread of AIS. There is a discontinuity here. It is possible that they are answering YES since they completed the survey *after* the ramp monitor had explained the AIS issue and mechanisms of spread. By adding "*Prior to today*," to each sentence in the 2005 survey, we can more accurately determine the extent of the boater's knowledge *before* their encounter with the ramp monitor.

In general, boaters were willing to inspect/wash their boats prior to entering or leaving water body. Only 3% stated that they would not wash/inspect their vessel. No reasons for their unwillingness were given. Perhaps boaters do not want to spend their free time washing their boat, paying for a car wash or are not concerned with invasive species. Boaters may be willing to inspect their boats, even if they do not plan to wash their boats. The 2005 survey has been modified to ask boaters why they do not want to inspect or wash their boats. (*See 2005 draft survey*)

When asked if the boaters would participate in a voluntary inspection, there was 100% compliance at the majority of the ramps, however, at the Wallum Lake/Whitehall Reservoir ramps, 66 (15.6%) of the boaters refused to submit to a voluntary inspection. The reason for the high number of refusals for that particular boat ramp monitor is unclear. Since visitors to Wallum/Whitehall had the overall least awareness of AIS (only 67.9 %), potentially their lack of understanding of invasive species resulted in their unwillingness to participate. Perhaps it is how they were asked, long lines at the Douglas State Park ticket kiosk, or they may have been in a hurry to start a fishing tournament early (the majority of the refusals occurred on July 23d). It is also possible that the boaters had alcohol on board, out-of-date registration stickers etc, and were afraid of getting caught and fined. The 2005 survey has been revised to encourage the ramp monitor to speculate *why.* (Did the boater seem rushed? Have a carload of children? Was there was a long line at the gate? etc.)

During the 2004 summer season, 11.1% of the boats inspected contained plant fragments, and of these, 55.7% were non-native species. The ramp monitors removed the invasive plants before the boats were launched. In a few instances, mainly at Cochituate, the boats were leaving an infested water body with fragments on the trailer, and the plants were removed before they left the park. By removing the non-native plants from 73 boats prior to their entering or leaving a water body, some of those water bodies were spared a potential invasion, and/or plants were prevented from being spread to additional water bodies it the Commonwealth.

Revisions to the Boat Ramp Survey Form

- Standardize how the survey is being presented.
  Numerous people circled NO when asked if they had any prior knowledge of AIS, then circled YES when asked if they knew that boats are a main pathway for the spread of AIS. It is possible that they are answering YES since they completed the survey *after* the ramp monitor had explained the AIS issue and then knew the answer. By adding "*Prior to today*," to each sentence, then we can more accurately determine the extent of their knowledge *before* their encounter with the ramp monitor.
- Question # 4, "*Do you know if you boat has been in any ponds with invasive species*?" needs to be removed
  If they answer NO, does that mean, "*No, I don't know*." or "*No, I have not been in any water bodies with invasive species*."? Additionally, the majority of boaters are not able to differentiate between native and non-native "weeds", and there for the data gathered from this question is not useful.
- Add "WHY" to question # 4.
  It would be interesting to know why people are not willing to inspect/wash their boat. Do they feel it is too time intensive? Too expensive? Would they inspect their boat even if they don't take the time to wash it? Knowing this will be helpful when we develop new outreach materials.
- Add DATE and WATER BODY to each survey form.
  Several of the ramp monitors did not write the date or water body at the top of the form as there was no specified area for them to do so. When a bundle of forms arrived that spanned several weeks and several ponds, there is no way to know which surveys are from which water bodies or which date.
- Add an EXPLAIN line beneath question # 9.
  If the person refused permission to inspect their boat for fragments, have the monitor ask why the boater why, or have the monitor speculate why. It would be helpful to understand the reason for lack of cooperation.
- Correct the numbering sequence in the survey.
- Add a contact information section.
  Add box where people can fill out their contact information if they would like additional information on AIS.
- Give each monitor a weekly form to submit with each group of surveys.
  Each week request that the ramp monitors tally the surveys for each day, and include weekend totals. Include an area for comments (weather each day, fishing tournaments or other events, questions for me etc). This would save the time required for one individual to tally every single survey, from every monitor etc at the end of the season and it would provide an "at a glance" view each week of how busy they are, issues that may have arisen etc.

Department of Conservation and Recreation
Lakes and Ponds Program
Boat Ramp Monitoring Program 2005

Date _____
Location _____

Welcome to_____. My name is_____, and I work for the Department of Conservation and Recreation. We are working to protect our public lakes and ponds from infestations of invasive exotic plants. Do you mind if I take a couple of minutes to check your boat for the presence aquatic plants and to ask you a few brief questions about aquatic invasive species? By increasing public awareness we hope to slow the spread of these invasive species.

Boater Survey

1) What town and state do you currently live in? _____

2) What are the last two lakes or ponds that your boat has been in? _____

3) Prior to today, had you heard of invasive exotic species? YES NO

   If so, which species have you heard about? _____

4) Prior to today, were you aware that one of the main ways that invasive plants enter a lake or pond is by hitching rides on boat trailers, motors and other gear? YES NO

5) Are you willing to take the time to inspect and wash your boat after visiting a lake or pond? YES NO

   If not, why? _____

6) Has this conversation increased your awareness and concern of invasive species? YES NO

Thank you for taking the time to participate in our survey. Here are a few brochures containing additional information on aquatic invasive species and a complimentary boat key ring. Enjoy your visit!

- Did you obtain permission to inspect the boat and trailer? YES NO
- Were any plant fragments or aquatic animals present on the boat? YES NO
- If so, were they non-native? YES NO
- What species did you find? _____

Thank you for your time!